Appl. No. : 10/600,145 Filed : June 19, 2003

AMENDMENTS TO THE SPECIFICATION

Please replace the paragraphs 0020 and 0041 of the specification with the following, in which added text is underline.

[0020] One embodiment of an expression vector of the present invention contains an OmpF promoter and part or all of the OmpF gene. A method for extracellular production of a desired protein employs an expression vector comprises a gene encoding an oligopeptide which is recognised and cleaved by a proteolytic enzyme and a gene encoding a desired protein introduced into the expression vector pOmpF6 to construct a recombinant expression vector that produces the desired protein extracellularly. This or an equivalent expression vector is then transformed into a host microorganism lacking the OmpF gene to obtain a transformed microorganism. The transformed microorganism is then cultured and produces an OmpF-fused protein from the culture. Lastly, the fused protein is treated with a proteolytic enzyme and the desired protein obtained. Available proteolytic enzymes include, but are not limited to: Factor Xa. enterokinase (Asp-Asp-Asp-Lys, SEO ID NO:19), genenase(His-Tyr or Tyr-His), IgA protease_(Pro/Ser-Arg/Thr-Pro-Pro-Thr/Ser/Ala-Pro, SEQ ID NO:20), intein, thrombin, trypsin, pepsin and subtilisin or plasmin, preferably Factor Xa. Available desired proteins include, but are not limited to: peptides, enzymes and antibodies that can be fused to OmpF, preferably βendorphin. Microorganisms can be Escherichia sp. or Samonella sp., but are not limited to these preferred host microorganisms.

[0041] As shown in Table 1 above, 2.8 mg of β-endorphin was purified by the technique of HPLC. Further, N-terminal sequencing of purified β-endorphin revealed that the amino acid sequence is Tyr-Gly-Gly-Phe-Met-Thr-Ser-Glu-Lys (SEQ ID NO:21), which corresponds with N-terminal amino acids of β-endorphin.